GARDEN AND FOREST.

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Organized Protection for Parks.

THE proposal to seize a portion of Central Park as a site for some of the exhibition buildings of the World's Fair has been discussed in these columns more than once, but we refer to it again, because it is a matter of much more than local interest. As an admirable example of pastoral scenery in the heart of a great city, and as the first work with such a motive ever designed for such a situation, Central Park is in a sense a national possession and is regarded with pride by the entire country. At all events, the proposed invasion is a representative case, and as such should command the attention of all those who have an intelligent appreciation of the value of public parks in cities and who wish to protect them from encroachment and spoliation. The pressure of the expanding city is felt on every foot of the boundary of every open space in New York, and the most powerful interests are constantly pushing to gain a foothold for some special purpose on the land devoted to public use. This situation is repeated in each of our rapidly growing cities, and unless the resistance to these constant assaults is unremitting and determined, we may expect to see many other urban parks share the fate of our own City Hall Park, and gradually disappear, or else become perverted to purposes foreign to their design and destructive of their highest usefulness.

It is not our purpose to repeat the reasons for preserving park areas, and especially for protecting those whose beauty and value will continue to increase for generations to come. But taking it for granted that a park is worth preserving, it should be remembered that it is only safe when public sentiment is intelligently and actively interested in its behalf. And since the attacking forces may be swift and strong, public opinion needs to be organized for expression and always ready in an emergency. It is known to every one who is familiar with the history of Central Park that the newspapers of the city have saved it from ruin more than once, when even its legally constituted custodians were eager to surrender it; and when the question of appropriating a portion of the park for the World's Fair was under discussion, the unanimity of the press, outside of the daily papers, was surprising. Journals in the special fields of architecture, art and engineering, and the leading literary, pictorial and religious weeklies, with scarcely an exception, took a firm stand against the invasion. It may be that this aid can always be counted on; but the real danger comes when the sober sense of the community is prostrated before a sudden gust of enthusiasm for some dazzling enterprise, whose right to occupy and possess the park is insisted upon as superior to that of the people or of their descendants.

It is plainly the part of wisdom to make preparation for such emergencies, and one assurance of safety against these sudden assaults might be found in a permanent association organized for the special purpose of protecting the parks from injury. True, there is a Board of Commissioners whose official duty it is to care for them. But this Board may need the positive support of public opinion, just as the Park Department in this city requires support to-day; and the time may come when the authorized guardians of the parks are their most dangerous enemies. In either case a voluntary association of public-spirited citizens, whose names would command respect and who would look at every question affecting the parks from the people's side, and not from the point of view selected by some special interest, could not fail to exert a wholesome influence. Such an organization, with a permanent Secretary, and, when needed, a paid staff, would be prepared not only to give timely warning of coming danger, but to give opportunity for public opinion to find effective expression. An association in New York, for instance, charged with the duty, could have at Albany when the legislative session begins, protests against any change in the law forbidding exhibitions in Central Park, from the associated architects of the city, from the artists, the physicians, the clergymen, and from citizens of every calling. The sum of the matter is that all parks in our cities are exposed to attacks, which are the more dangerous because many of them come from combinations of worthy people, organized for worthy purposes. The ultimate safety of these pleasure-grounds can be assured only by an enlightened and alert public sentiment; whether some systematic plan for helping the public will to find expression is not needed now to meet well organized attacks against them is a question worth considering by the friends of public parks in all our cities.

The volume of the final reports of the tenth census, for which the largest demand has been made at the Department of the Interior, is the ninth, which is devoted to the forests and forest-resources of the United States, and the edition is now nearly exhausted. This fact seems to indicate that the American forests, which ten years ago created no real interest except among persons engaged actively in destroying them, have now become a matter of general concern with thoughtful persons in all classes of society. Ten years ago little was known, actually, of the extent or composition of our forests. The conditions essential to the distribution and development of our most valuable trees, and the character even of the material produced by many of them, had not been determined; and the productive capacity of the forests of the country, if any one thought about it at all, was considered inexhaustible. Now it is known where our forests are, at least, and how they are composed, what they produce and how long they may be expected to remain productive; and there is hardly a newspaper in the United States which does not contain, from time to time, valuable information about forests and forestry. Commissions have been appointed in a dozen states to collect and disseminate knowledge about forests, and the interest in the subject is increasing on all sides. This result has been brought about by the hard and untiring work of a few conscientious investigators. Their work has not been thrown away if it has prepared the way by this general dissemination of knowledge for the gradual introduction into the United States of systems of forest-management which, when they are adopted, will

relieve us from the stigma of standing alone among civilized nations in disregarding the value of the forest as the foundation of all permanent national prosperity.

If the forests of this country should perish, agriculture and the arts would perish with them. Material development would be arrested and poverty would replace prosperity from one end of the land to the other.

The Deciduous Cypress.

THE view of a Cypress-swamp in southern Indiana, which appears upon page 7 of this issue, will serve to give an idea of the appearance of the Deciduous Cypress as it is found growing toward the northern limits of its distribution, where it does not attain to the vast size which characterizes this tree further south, and especially in Mexico. But in Indiana, even the Cypress, if not as large as it is often seen south of the Ohio River, is still a tree of respectable size; and Mr. Robert Ridgway, of the Smithsonian Institution, who has sent us the photograph from which our illustration has been made, has measured trees in the swamps near the mouth of White River nearly 150 feet high, and trunks eight feet through above their swollen and buttressed bases. Trunks twelve or fourteen feet through have been seen in the southern States; and a few years ago it was not difficult to find them ten feet in diameter in the great swamps bordering the lower Mississippi and some of the other rivers of the Gulf States.

The Deciduous Cypress first appears in the Atlantic States in the lower portion of Delaware; thence it extends, generally near the coast, to southern Florida and through the Gulf States and the Valley of the Mississippi to the banks of the lower Ohio. This species, or a related one hardly to be distinguished from it, reaches far south into Mexico, where it attains enormous size and an individual existence lasting through centuries.

The Cypress in the United States grows always in water or on low, flat land adjacent to rivers or great shallow lakes, often covered with water during weeks or months at a time. That part of the trunk which is covered with water, or which is liable to be, is greatly enlarged and strengthened by huge, often hollow, buttresses, which project out in all directions. Each of these buttresses terminates in a large branching root, which extends out to a great distance, sending down stout anchor-roots deep into the ground, and with many lateral roots, from which spring the "knees" peculiar to this tree. The trunk, covered with furrowed, dark red bark, shoots up perfectly straight from its enlarged base, forming a tapering column eighty or ninety feet high, when it divides into a number of long, stout, horizontal branches, which form the wide, flat top, which is hung generally with the long stems of the Southern Moss (*Tillandsia usneoides*). Naturalists have puzzled over the Cypress knees and the purpose of this development, almost ever since the tree was discovered; and they have formed the subject of many essays. The knees first appear, often close together, as small tubercles on the upper side of the roots. They grow rapidly until they attain a height of from two to ten feet, or have pushed well above the water-level, when they cease growing upward, and increase in diameter. The upward growth is very rapid, and the bark covering the growing top is soft and spongy. There are various facts which seem to indicate that the service which these peculiar growths perform for the tree is to bring air to the roots, otherwise cut off by the water which covers them during a considerable portion of the year, from all connection with the atmosphere. This is the view of Professor N. S. Shaler, who has made a careful study of this tree, and who finds "that it is not unreasonable to conjecture that this function of the knees is in some way connected with the æration of the sap."* His facts are "the failure of the knees to develop when the trees have grown on high ground; the development of the knees above the permanent water-level, and to a height varying with that level; and finally, the destruction of the trees whenever the level of permanent water rises above the top of the knees." These views are confirmed by a more recent paper,† published by Mr. W. P. Wilson, in the Proceedings of the Philadelphia Academy, in which it is shown that other plants besides the Cypress, which grow habitually with roots covered with water—the Water Gum (*Nyssa silvatica*, var. *aquatica*), *Avicennia nitida* and *Pinus serotina*—develop similar root-processes; and what is still more suggestive, Mr. Wilson has induced plants of Indian Corn to send roots above the surface of the soil by keeping it continually saturated with water.

There is another point, and an important one, in the life history of our Cypress, which has never been satisfactorily explained. The great masses of this tree and the largest individuals are found in swamps or in shallow ponds, which are never dry except during periods of exceptional drought, and where the water is several feet deep at the time the seed would germinate. How did these great trees begin their existence, which may have extended through centuries, and how did the seed from which they spring find an inch of dry ground to attach itself to? The evidence points to a larger quantity of water in all our rivers and swamps five hundred or a thousand years ago than at present, and it is certainly improbable that the great swamps of the southern states could have been dry at any time during the period that the Cypress has occupied its present territory. Seedlings do not now appear among the old trees growing in the wet swamps and ponds, and they are only found on the margins of swamps in comparatively dry ground. Professor Shaler's hypothesis that the great trees in deep water have grown from branches blown down from neighboring trees, and rooted in the mud, is hardly consistent with the manner of growth of coniferous trees, and some other solution of this phenomenon must be sought for.

The vast size and beauty of this tree, the great age to which it attains, the peculiarities of its growth, the value of the material which it supplies to man, and its commercial importance, are not more interesting than its history. Like its near relatives, the California Sequoias, Taxodium, represented now only by our southern tree of comparatively restricted range, and by a very similar species in China (*Glyptostrobus* or *Taxodium Sinense*), once played a much more important part in covering the surface of the northern hemisphere than it does in these days. For in latest tertiary times just preceding the glaciation of the northern hemisphere, our Taxodium, with Sequoias and various Ginkgos, grew in Greenland and in Spitzenburg, and then was widely spread through North America and Europe, where grew, too, a Glyptostrobus almost identical with the existing Chinese tree. The coming of the ice drove all these trees out of Europe entirely, and forced Taxodium into what is now our southern states, and on to the highlands of Mexico, where the survivors of this once mighty race, barely altered by their new environments, now find their only abiding place.

* Notes on *Taxodium distichum* in *Mem. Mus. Comparative Zoölogy*, xvi., Nos. 1 and 2.

† The Production of Aërating Organs on the Roots of Swamp and other Plants, *Proc. Acad. Nat. Sci. Phil.*, April 2d, 1889.

The Art of Gardening—An Historical Sketch.

XVI.—Mediæval Europe.

WHEN barbarian hordes from beyond the Rhine began to spread over the lands where Rome had ruled, first the isolated country-seat and then the suburban villa was abandoned, all classes seeking refuge within the walls of towns. Once deprived of constant skillful attention, the gardens of the Romans gradually decayed. "The walks were overgrown first with grass, then with bushes and then with forest trees, and on the former beds and playgrounds the shepherd pastured his flocks."* Yet we must not think of the ruin as immediate or complete. Even a Goth or a Vandal could appreciate the charms of an Italian country home, if he lacked the power to preserve them in perfection. We read of Theodoric restoring and improving the imperial gardens at Ravenna, and of Totila (strange conjunction!) inhabiting Hadrian's villa at Tivoli; and a story is told of some Christianized Goth who diversified his clipped Box-trees by causing some of them to be cut into the shape of the cross. When, in the sixth century, the troops of Belisarius entered Grasse, about fifty miles from Carthage, they found a palace of the Vandal kings and countless villas, surrounded by gardens "which might deserve the Persian name of Paradise," and which Procopius declared were finer than any he had seen in the East or the West.† Of course they were an inheritance from the Roman colonists whom the Vandals had dispossessed three centuries before. Even at the dawn of the Renaissance there were traces of ancient gardens still to be found in various parts of Italy and southern France which, together with the descriptions that Pliny and others had bequeathed, greatly influenced the re-birth of the art of ornamental gardening.

In the north, however, Roman relics perished more quickly and there was small effort made to replace them. Almost the only gardeners of the early mediæval world were the monks, who, within the walls of their great establishments, cultivated

* Jaeger: "*Gartenkunst und Gaerten.*"

† Gibbon; "Decline and Fall of the Roman Empire;" chap. xli.

fruit-trees and trellised vines on an extensive scale, had flower gardens with intersecting walks and rectangular beds, and brought the water they needed in canals of masonry or wood.* Sometimes a special part of the monastic garden was set apart for medicinal herbs, and here we see the germ of the scientific botanical collections of later days. The Benedictines were particularly devoted to all works of cultivation, and even into England, where the heathen Angles and Saxons had obliterated even the memory of the horticulturist from imperial Rome, these new emissaries of the now papal city soon brought again a knowledge of useful plants and flowers.

The mediæval burgher had at first but little chance to develop a love for gardens, yet as soon as he attained to any degree of comfort—in the twelfth and thirteenth centuries—his house usually had a small garden in the rear. The noble, during the more unsettled centuries when he was forced to be constantly on the watch for enemies, perched on a hill-top or sequestered in an inaccessible glen, had no garden except his court-yard, where, in Germany at least, a great Oak or Linden usually rose among the little flower-beds. The crusades introduced him to some acquaintance with exotic plants, and then Oleanders, Pomegranates and other ornamental shrubs in pots often stood beside his door. In France the late-mediæval chateau always had a garden with a turfed lawn, vine-clad arbors, parterres chiefly filled with Roses, an orchard, a vineyard and a fountain if possible.† In England, a writer of the twelfth century, Alexander Neckham, describing a baronial garden, corroborates the belief that "at the outset it corresponded to our kitchen-garden," yet suggests "a certain share of taste in arranging the herbs, plants and fruit-trees."‡ When Fitzstephen's "Chronicle" says of London, at the same period: "Adjoining to the buildings of that city all round lie the gardens of the citizens who dwell in the suburbs, which are well furnished with trees, are spacious and beautiful," we can understand nothing more than kitchen-gardens; and even these must have been devoted chiefly to fruits, tubers and herbs, for scarcely any green vegetables were consumed in England before the time of Henry VIII.

Even kings and princes long lived between walls, and prided themselves upon gardens which to-day would seem ludicrously small and poor. They make a great feature in the writings of the time, but seldom were more than walled enclosures, with clipped trees forming arbors and connecting covered walks, a fountain or canal, formal flower-beds, and stiff little shrubberies. Childebert, in the sixth century, laid out a Rose-garden for his wife in Paris, probably near the present Hotel de Cluny, where the ruins of Roman baths still remain,§ built terraces and grafted his fruit-trees with his own hand. Charlemagne is considered the first real patron of horticulture, and full lists are still extant of the plants with which he adorned his palace-gardens at Ingelheim and Aix-la-Chapelle. But it is impossible to gain an idea of his work considered from the point of view of art, nor can we discover just what was the aspect of the place in the great Dominican convent at Cologne, where, centuries later (in the month of January, 1247), Albertus Magnus entertained the King of Holland "in pleasant warmth amid fruit-trees and blossoming plants."¶ Some sort of forcing-house is, of course, implied, and therefore the great schoolman is often cited as the restorer of the long-forgotten art of cultivation under glass. Indeed, his skill in this direction is said to have been one of the reasons why he was accused of witchcraft.

In this same thirteenth century St. Louis laid out the end of an island in the Seine at Paris as a garden; and Frederick II. of Germany, wishing to reproduce the delights of his Sicilian home, constructed a garden at Nuremberg which was compared to the hanging-gardens of Babylon because it had terraces supported by arches. Another Parisian garden, large for the time, lay between the Louvre and the church of St. Germain des Près.‖ But more remarkable was the garden of the Hotel St. Paul, which covered twenty *arpents* of ground, and which Charles V. filled with all manner of living curiosities, especially prizing his cages of parrots. A labyrinth of clipped trees was its chief feature, but when Paris fell into the hands of the English this was removed by the Duke of Bedford, and the spot planted with Elms. In all descriptions of similar spots we read of cages for animals, aviaries, fish-ponds and arbors, which by their names recall the features of a Roman villa-garden, but were very different in size and artistic value. How small and simple were the finest of the early northern pleasure-grounds may be read in the enthusiasm of the Crusaders over every garden which they saw in Asia, or even in the south of Europe. Nor did later centuries improve upon them much until the Italian Renaissance spread its influence over the whole of Europe. Even in the fifteenth century, a garden which Philip the Good, of Burgundy, laid out at Hesdin, in Flanders, gained its fame from the puerile surprises and mechanical toys with which it delighted the fantastic taste of the time. Of course, however, shade-trees as well as the features already mentioned were always prized, and an old historian mentions the pleasure he felt at seeing 5,913 Elms brought with their roots by water to Paris.* The early kings of France had country-houses in the vicinity of their capital, but sought them for the pleasures of the chase, not of the garden.

The true successors of the Roman artists during the mediæval period were first, the builders of the new Rome which rose beside the Bosphorus, and then the Moslem conquerors who, between the seventh and the fourteenth centuries, spread themselves over so vast a portion of the Mediterranean lands.

Constantine and his immediate successors imitated in their capital not only the buildings but the pleasure-grounds which they had left beside the Tiber, and Justinian, in the sixth century, greatly improved upon their work. Many of the twenty-five churches which he built in the city and its suburbs were placed amid beautiful groves, and on the Asiatic shore, near Chalcedon, he laid out splendid gardens around the summer residence of Theodora, which were praised by the poets of the age for "their rare alliance of nature and art."†

By the ninth century generations of luxurious emperors had given the great palace at Constantinople a size, a splendor and a variety which the occidental imagination can hardly realize. Constantine Porphyrogenitus himself wrote a description of it. We cannot restore its arrangement from his words, but we learn that it was a vast aggregate of buildings and gardens with colonnades, avenues, fountains, basins and parterres; that one garden, laid out in terraces, overlooked a great race-course; and that another, the central feature of which was the famous banqueting-hall called the "Chrysotriclinium," contained seven peristyles and eight court-yards planted with Plane-trees.

M. G. Van Rensselaer.

New York.

Holiday Notes in Southern France and Northern Italy.—IX.

IT is a difficult task to write an account of such a garden as that of Mr. Hanbury. I find a pocketbook half full of notes taken there, and I have been making selections from these and again going through these selections a second or third time in order to keep my account within reasonable bounds. Readers may form some idea of the extent of the collections at La Mortola when it is stated that the "Alphabetical Catalogue of Plants growing in the open air in the garden of Thomas Hanbury, F.L.S.," occupies sixty quarto pages; at the end of this catalogue the plants are arranged geographically—that is to say, alphabetically under each country. A mere glance through this portion shows at once how much each part of the world contributes to the gardens of the Palazzo Orengo. A Systematic Catalogue—published like the last in 1889—has the plants arranged in families, and so without trouble the relative importance—in numbers—of the various natural orders can be readily ascertained. Both lists give, after name of plant, references to either descriptions or figure, the time of flowering at La Mortola and the native country of the species.

Winter or early spring is the best time to see this garden; then, I have no doubt, the words of Mr. Hanbury's gardeners, Signori Villa and Verri—both men who not only know plants, but love them—would be doubly true. Whilst wandering from one surprise to another my companion and myself frequently expressed our astonishment and admiration, until at last our courteous conductors remarked, "At this season the place is not such great things, but come in winter or spring and you would at once call it an earthly paradise." In its issue of February 20th, 1886, the *Gardeners' Chronicle* contains a list of plants in flower on February 2d at La Mortola; the list contained the names of upward of five hundred species.

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* Viollet-le-Duc. "Dictionnaire de l'architecture.—Jardins."

† Viollet-le-Duc.

‡ W. C. Hazlitt: "Gleanings in Old Garden Literature."

§ André: "L'art des Jardins."

¶ August Demmin, in "Studien ueber die bildende Kuenste und Kunsthandwerke," says that the banqueting-hall was encircled by fruit-trees, that the tables were decorated with Roses, and Almond and Vine-branches, and that a Vine-arbor spread above the seat of the King.

‖ In Alphand's "L'art des Jardins" there is a picture taken from a fourteenth-century tapestry, which represents the regular rows of trees with which this garden was planted, and a parterre in which intricate patterns were constructed with low clipped Box-hedges.

* Sauval, quoted by André: "L'art des Jardins."

† Gibbon.

A few data summarized from the catalogues mentioned will give some idea of the extent and interest of Mr. Hanbury's collections. There are fifty-one Agaves, sixty-nine Opuntias, thirty-nine Cereus, as many Mamillarias, forty Aloes, twenty-seven Stapelias and nearly a hundred Mesembryanthemums. To go on counting would be a somewhat tedious task for the writer, and the results of his efforts, if published to any extent, would probably prove as tedious to the readers of GARDEN AND FOREST; I therefore drop statistics with the remark that Acacia occupies a page and a half and Solanum nearly a page of the catalogue.

Of course all the Palms mentioned in previous series of notes, and many others besides, are to be seen at La Mortola, but the general collections of plants are too vast to allow space for large masses of each species. The most attractive member of the genus Phœnix—I am speaking of those cultivated in the open ground along the Riviera—is *P. Canariensis;* it is a quick grower, and is now grown in enormous numbers. Instead of having somewhat scattered glaucous pinnæ and rather stiff habit like the common Date Palm, it has more numerous glossy bright green pinnæ and a graceful habit. There seems to have been some doubt always as to the origin of this species until Dr. Christ, of Basle, who studied some year or two ago the flora of the Canary Islands on the spot, found localities in which truly wild colonies of the Phœnix were growing; other evidence of an historical nature collected by Dr. Christ, and his companion, Dr. Bolle, furnishes additional proof that this handsome Palm is really a native of the Canary Islands. Altogether forty-four Palm-names figure in Mr. Hanbury's catalogue—some of these, however, will have to be reduced when the plants flower and fruit.

I select a small proportion of the plants in flower at the time of our visit: *Tecoma stans* and *T. capensis*, the former with yellow, the latter with scarlet flowers—both splendid bushes. *Carica Cundinamarcensis* was both in flower and fruit. *Statice rosea*, a south African plant with charming, rose colored blossoms, was represented by a big, dense bush clothed with flowers; under cultivation in England it is rarely satisfactory. *Russellia juncea* and *Plumbago Capensis* gave an abundance of blossom, and in one or two spots the splendid blue trumpets of *Ipomœa Learii* formed quite a dazzling sheet of color; never under glass in England had my companion or myself seen this climber to such advantage. *Correa cardinalis*, the most beautiful member of this Australian genus, was noted as especially attractive; not far from it another Australian plant, *Pimelea decussata*, was also in flower. *Iochroma Tonellianum*, with purple blossoms; *I. coccineum*, with scarlet ones, and the Humming-bird's Trumpet, *Zauschneria Californica*, made an attractive trio. The huge, white flowers of *Cereus Napoleonis* were especially striking, and on a "pergola," or walk with a sort of flat, trellised roof clothed with a bewildering array of climbers *Passiflora Decaisneana*, with its large, handsome flowers—in form and color not unlike those of *P. alata* and *P. quadrangularis*—was very conspicuous. On the low stone wall on one side of this walk numerous species of Begonia, Æschynanthus, many Bromelias—some of these in flower—*Cypripedium insigne*, etc., flourished in the shade.

Mr. Hanbury has paid special attention to economic, particularly medicinal, plants. As most of these, however, are not of value from an ornamental standpoint, I pass them over. A large collection of Orange-trees, etc., gathered together from all parts of the world where Oranges are cultivated, affords means for studying and comparing the various forms of this puzzling family which do not occur in every country. A large bush or small tree of the curious Chilian *Quillaja Saponaria* was laden with its woody carpels, which, at first sight, by no means recall the order Rosaceæ, to which the plant belongs. The thick bark is rich in saponin, which can be procured from it purer and more plentifully than from any other source; up to the present the principal use has been in washing and cleansing fine stuffs and tissues; but recently, however, the discovery of the action of saponin or a decoction or infusion of Quillaja bark on hydrocarbon oils, has opened out great possibilities for its use. Such extremely inflammable oils as benzoline—the dangerous character of which rendered the utmost care necessary in packing, carrying, etc.—can now be solidified and shipped with little danger or trouble—the liquid condition being readily restored on arrival by the addition of a small quantity of citric acid.

A covered way clothed with *Ephedra altissima*, a member of the order *Gnetaceæ*, a family nearly allied to the conifers, was gay with the numberless coral-red fruits which weighed down the green, leafless, twiggy branches. Probably the Kaffir Plum or Kei Apple, of south Africa, fruited for the first time in Europe in Mr. Hanbury's garden some years ago. At the time of our visit the tree was laden with its yellow plum-like fruits, somewhat acid in taste and astringent in character. One of the most beautiful of all the fruiting herbaceous plants was a Solanum received from Vilmorin, Andrieux & Co., under the name of *S. ciliatum macrocarpum*. It had a spiny stem and leaves, and spreading branches borne down by the weight of the large, bright vermilion-red fruits; on comparing with herbarium specimens it appears to be identical with the Brazilian *S. aculeatissimum*.

A south African plant, a composite from the Karroo region, though not in flower at the time of our visit, is interesting on account of its having, more than any other at La Mortola, won the admiration of Queen Victoria when she visited Mr. Hanbury's garden in March, 1882. The plant in question, *Pteronia incana*, forms a dense, twiggy shrub, and has small, ashy gray leaves. The pretty yellow flower-heads so charmed the Queen that she took away with her a quantity of the flower-laden branches. Since then the species has been called in the neighborhood, "La pianta della reina"—the Queen's plant.

At Mentone, which is so near La Mortola that the climate of the two places must be almost alike, the mean temperature of November is fifty-four degrees Fahr., December forty degrees, February forty-nine degrees, and March fifty-three degrees. Nearly the whole of the annual rainfall takes place during the winter and spring months; during summer only an occasional thunder-storm comes to moisten the thirsty ground. The storing of water, therefore, for use during the hot, dry summer months is an absolute necessity, and entails much labor and expense. *George Nicholson.*

Kew.

New or Little Known Plants.

Viburnum pauciflorum.

THIS pretty species, which attains a height of three or four feet only, might be described as a dwarf *V. Opulus*, with small cymes, terminating short, two-leaved, lateral branches, and without the showy neutral ray flowers of that species. It is a widely distributed northern plant, inhabiting cold, moist woods from Labrador to Alaska, extending south to the high mountains of northern New England, the Saskatchewan country, Washington, and to the Rocky Mountains of Colorado. *Viburnum pauciflorum* has recently been introduced into the Arnold Arboretum, where it has not, however, flowered. The small figure of a flowering branch from Alaska is Regel and Herder's "Plantæ Raddianæ" (iii. *t.* 1, p. 3), is the only one published previously to our illustration upon page 5, drawn by Mr. Faxon from specimens gathered among the White Mountains of New Hampshire. *C. S. S.*

Foreign Correspondence.

London Letter.

THE year 1889 is practically over, so far as public horticulture is concerned. Exhibitions are at an end, the final periodical meeting has been held, and the only remaining attraction is a public dinner or so, at which hand-shaking and general back-patting will be in order. English horticulturists appear to be cultivating a love for public dinners in connection with their clubs, societies and shows; at any rate, they are much more frequent in recent years than they were formerly.

Next week I hope to be able to notice the principal additions that have been made this year to the list of good garden plants in England. Speaking from memory, I do not think there is anything remarkable to record in the way of new introductions. On the other hand, some very fine hybrids, crosses and varieties of garden origin have been added. Collectors confine their work chiefly to Orchids, so that comparatively little is to be expected from them. Hybridization is the great attraction of the time, and almost every man who has a garden tries his hand at crossing one plant with another, in the hope of getting something startling.

The last of this year's bi-monthly meetings of the Royal Horticultural Society was held on Tuesday, December 10th. Circumstances are totally against anything approaching a successful exhibition, or even a good muster of fellows in the middle of December. Despite this there were several exhibits

of more than average interest, and others which were worth going to see. Orchids were represented, first, by a basket of choice plants from Messrs. F. Sander & Co., amongst which were *Odontoglossum Wattianum*, the new species noted in my last letter. It is not bright in color, nor uncommon in form, and may be called a mixture of *O. luteopurpureum* and *O. Sanderianum*. Another plant shown as new, and named *Cattleya O'Brieniana*, is a variety of *C. Loddigesii* with the petals slightly broader and less curved. *Dendrobium Slatterianum* is a good variety of *D. bigibbum*, very dark in color, the lower part of the lip being of a deep maroon; the middle lobe of this organ is also longer than in *D. bigibbum*. Some persons who saw it were inclined to call it a variety of *D. Phalænopsis*, and thought it might be a connecting link between that species and *D. bigibbum*. Whatever its affinity, *D. Slatterianum* is a pretty addition to the Australian Dendrobiums. *Aërides Savageanum* is a small flowered addition to the numerous, and, as a rule, handsome-flowered group of species represented by *A. odoratum*.

Masdevallia Tovarensis was exhibited in superb condition, the plant bearing 255 leaves, all perfectly healthy, and 162 spikes with 346 expanded flowers upon them. It would be difficult to surpass this Masdevallia as a free flowering, easily grown plant, but the specimen shown was a surprise even to those who know the good qualities of the species. Mr. Hodgson had grown this specimen from a tiny plant with two leaves, which he purchased for a guinea fifteen years ago.

Cœlia bella is a Mexican Orchid which is not common in cultivation, but a plant of it shown by Mr. Malcolm Cook was ornamental enough to attract attention. It bore eight spikes of flowers, each spike with from four to six expanded blooms, which were two inches long, tubular, the segments spreading, recurved near the apex, and colored white with crimson lips; the lip is triangular and sulphur yellow in color. Cœlia is a genus of some four or five species, three of which are in cultivation at Kew, but only *C. bella* is handsome enough to rank with garden Orchids. It has been in cultivation many years, and used to be known as *Bifrenaria bella*. There is a figure of it in the *Botanical Magazine, t.* 6628.

Cypripedium Niobe, a hybrid whose parents are *C. Fairreanum* and *C. Spicerianum*, is one of the most charming of the

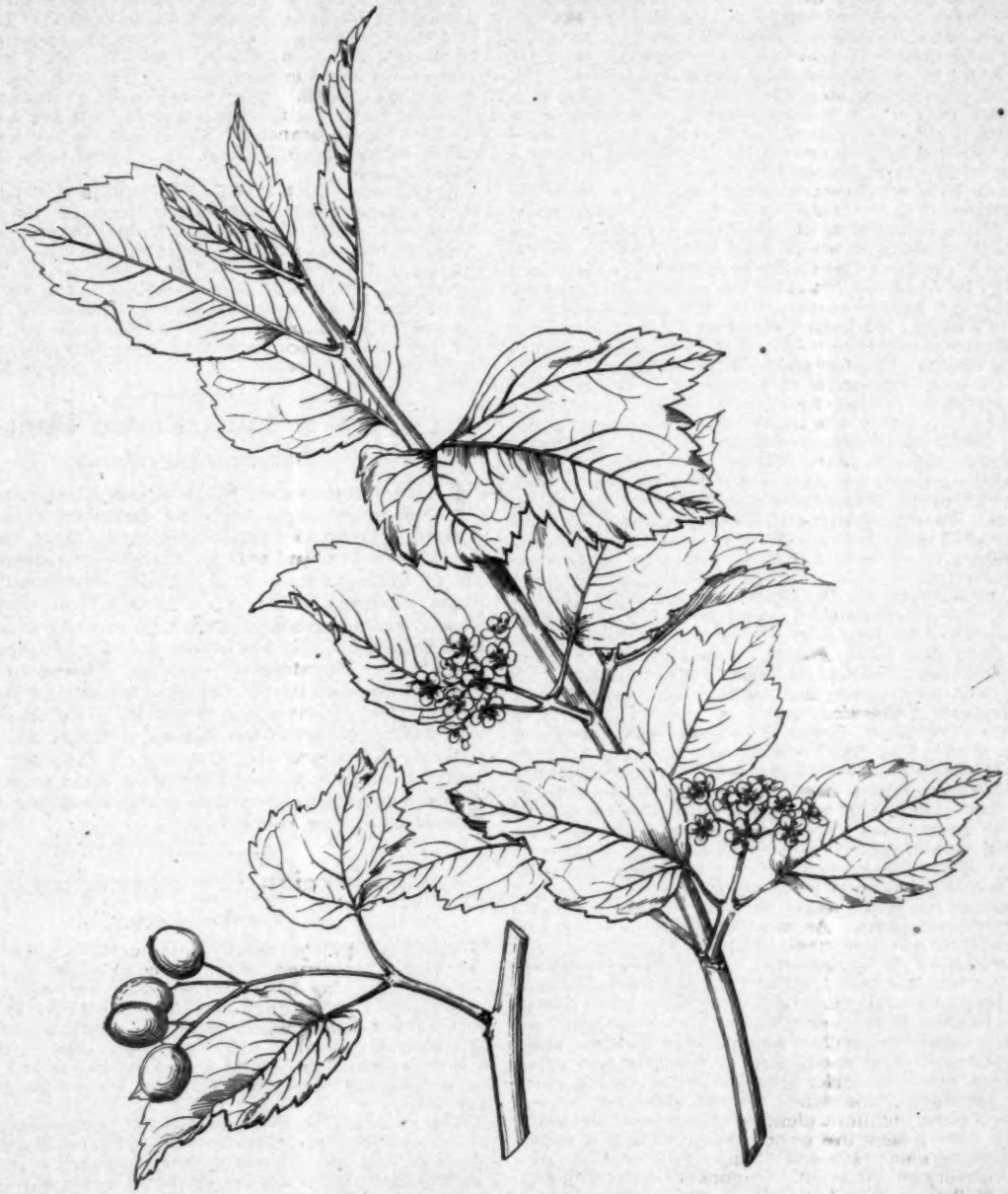

Fig. 1.—Viburnum pauciflorum.—See page 4.

smaller hybrid kinds of Cypripedium, combining, as it does, the characters of two of the best species in the genus. The dorsal sepal is broad and recurved as in *C. Spicerianum*, but greener at the base and veined with purple. The petals are wavy, curved as in *C. Fairreanum*, deep green and bronze, the lip being small and greenish. Three plants of it in flower were shown by Messrs. Veitch, who raised it, and to whom a first-class certificate was awarded for it.

Other hybrids shown were T. B. Haywood (from *C. Druryi* and *C. superbiens*), *C. Galatea major* (from *C. Chantini* and *C. Harrisianum*), *C. Leeanum* and *C. Lathamianum*.

Cattleya Pallas, a hybrid raised from *C. Dowiana* and *Lælia crispa*, was also certificated, but its only good point was the color of the lip. In attractiveness the flowers were inferior to those of a good form of either parent. *C. Dowiana* has had little influence either on the color or form of the flowers. *Vanda Amesiana*, with a strong spike of flowers, was shown by Lord Rothschild. Apparently there is some variety of color amongst the plants of this Orchid; some of them being inferior to others in the depth and clearness of the purple on the labellum.

Mr. Cannell showed a stand of cut flowers of Zonale Pelargoniums, for the cultivation of which he is famous. In England, and especially in the neighborhood of London, it requires considerable care and skill to bloom these plants well in December. When grown as Mr. Cannell grows them, with enormous trusses of flowers full of substance and clear in color, they are of the greatest value in winter. The best of those shown were the following; White flowered kinds, Swanley White and Amy Ampheet; pink, Mrs. D. Saunders and Mr. Wildsmith; pale blush, Stella and Massey; salmon, Souvenir de Mirande; scarlet, Hyacinth and Brilliant; purple or magenta, Dr. Tucker and R. Dean. I mention these because I do not think it possible to find better kinds amongst the many large-flowered Pelargoniums now grown. There are a few ardent admirers of these plants, conspicuous amongst them being Mr. Chamberlain, who devotes a large house to them in winter, and delights in their flowers as much as he does in Orchids. Mr. Cannell also showed flowers of Chrysanthemum Mrs. E. W. Clark, a child of America, I believe, and remarkable for its fragrance. It is a large flowered incurved Japanese kind, colored deep purplish magenta, and not very attractive. Crimson and Gold was another of Mr. Cannell's Chrysanthemums. It is one of the so-called single flowered section, and has a large, dark yellow disc with crimson ray florets flaked with yellow.

Some well flowered panfuls of the pretty, snow white *Narcissus monophyllus* came from Mr. Ware, of Tottenham. A few years ago this plant was extremely rare in cultivation, and was very difficult to manage. Now, however, it is easy to grow and flowers if only the bulbs are kept quite dry and baked in full sunshine all summer. It is a native of Algeria, where it occurs in abundance. Newly imported bulbs always flower with us in December, but after a year's cultivation in England they do not come into bloom before February. It may not be known to every one that *N. monophyllus*, sometimes called *Bulbocodium monophyllum*, has short, rush-like leaves, and pure white, hoop-petticoat-like flowers, in form like those of the well known *N. Bulbocodium*. The flowers remain fresh a month or more. One of the most striking of the exhibits was the Carnation Winter Cheer, the plants being less than two feet in height in perfect health, and covered with large full flowers, two and a half inches across, of the brightest crimson color. It would be difficult to find a better winter-flowering Carnation than this, and I am told it is one of the very easiest to grow.

The most attractive among the flowering plants in our stoves at the present time are *Ipomœa Horsfalliæ*, with its variety, *Briggsii*, and the closely allied species, *I. ternatea*. The first named extends over half the roof of the stove, its many shoots hanging down or festooned from pillar to pillar, and crowded with large clusters of rich, deep crimson, cup-like flowers. It has been beautiful for a month or more and will continue so at least as long again. The variety *Briggsii* has paler and slightly smaller foliage and rosy red flowers, whilst *I. ternatea* has flowers as large as those of the Morning Glory and as pure a white. We miss this year another beautiful flowered species of Ipomœa, that is, *I. rubro-cærulea*, a stove annual, which may be grown so as to bloom in midwinter. Treated liberally, it covers a large space in a short time, and in winter its shoots are wreathed in large, flat-limbed flowers of the purest china blue, fading to mauve. That remarkable species, the Moon Flower of the tropics (*I. Bona-nox*), whose great white flowers expand only at dusk and close at sunrise, has also been flowering here for some time. I measured a flower lately, and it was exactly six inches across.

Kalanchoe carnea.—I am afraid that this new introduction has been somewhat overrated; at all events, none of the examples I have seen this year are sufficiently attractive to rank among good conservatory winter flowering plants. The habit is erect, branching, about two feet high, the leaves coarse and soft, and the terminal heads of flower, whilst large and full enough, are too undecided in color, being neither white nor rosy, but a dull milky color. With good cultivation and selection there may be something of value got out of this plant, but the type does not please. It was introduced last year from south Africa, and received a first-class certificate from the Royal Horticultural Society. *Begonia geranioides* is one of the most charming of late or winter flowering species. It is deciduous, about a foot high, and produces numerous erect peduncles of elegant pure white flowers. A group composed of three dozen or so plants of this species, *B. Socotrana* and the variety John Heal, mixed together, is one of the most charming pictures one could desire to see in November or December. *B. geranioides* is a native of the Cape.

London. *W. Watson.*

Cultural Department.

Sowing Seed.

THERE are few good sowers of seeds. To buy seeds and to cover them with earth comprise the sum of practice with many people, and failure to get the most from seeds means more than the loss of the seeds themselves, for it is indication of general incompetence or shiftlessness. To sow well is the first operation to acquire in gardening; propagation by cuttings is the second.

Two or three general rules are fully as important as many of the explicit instructions: 1. Do not be in a hurry. In all my teaching how to sow it is necessary to make this the important point. It means taking an abundance of time to prepare soil and to provide proper conditions. Ten seeds well sown are more valuable than fifty half sown, and, as a rule, the more valuable the plants to be grown the more imperative is this rule. 2. Avoid short-cuts which are wholly artificial. In all the long catalogue of compounds devised to hasten germination, I do not know one which is worth its cost or trouble. It is always legitimate to hasten germination, but it must be done by perfecting natural or normal conditions. 3. In cases of doubt as to the proper method of handling rare or choice seeds, sow in installments, at intervals. This means experiment. With practice comes an almost intuitive faculty to determine at once what are the proper methods of dealing with seeds with which we have never had experience. But until this faculty comes, safety demands caution. And some people never acquire the faculty. The gardeners of my acquaintance are comparatively few to whom I would entrust an entire sample of strange seeds from another region; not because I could do better with them, but I can learn from a few how to handle many. I once failed completely in an attempt to grow weak seeds of a couple of species, although the year after, profiting by failure, I secured an abundance of fine plants from the same samples.

Seed-sowing comprises three distinct subjects: 1. Selection of the seed. 2. Treatment of the seed preparatory to sowing. 3. The sowing itself. In the first division are to be considered all those questions concerning the age of the seed, the condition of the parent plant, weight, color, and so on. These matters are too extensive for discussion here. The remaining points may be considered.

TREATMENT PREPARATORY TO SOWING.—There are many kinds of seeds which demand some particular treatment before sowing. These are seeds of most fruit plants, nuts and bony seeds, and various sorts of pulpy fruits. The pulp of fleshy seeds and fruits should be removed before seeds are sown. The pulp is usually removed by maceration. The berries of Red Cedar, Raspberries, Cranberries and the like are mashed or bruised and placed in water until the coverings become soft. This occurs in a few days in such soft fruits as Raspberries and Blackberries. The pulp rises and the seeds settle, and it often becomes an easy matter to separate them; or, if the pulp still adheres to the seeds after a short period of maceration, it may be cut by the addition of a half stick of caustic potash to a pail of water. The seeds are allowed to remain in the potash water but a few hours at most, when they are strained out and rinsed in fresh water. They are then spread upon tables to dry. Sometimes I remove the pulp by rubbing the seeds in sharp sand. The fruits are buried in clean, sharp sand until the fleshy portions become nearly dry, when the whole mass is rubbed through the hands until the

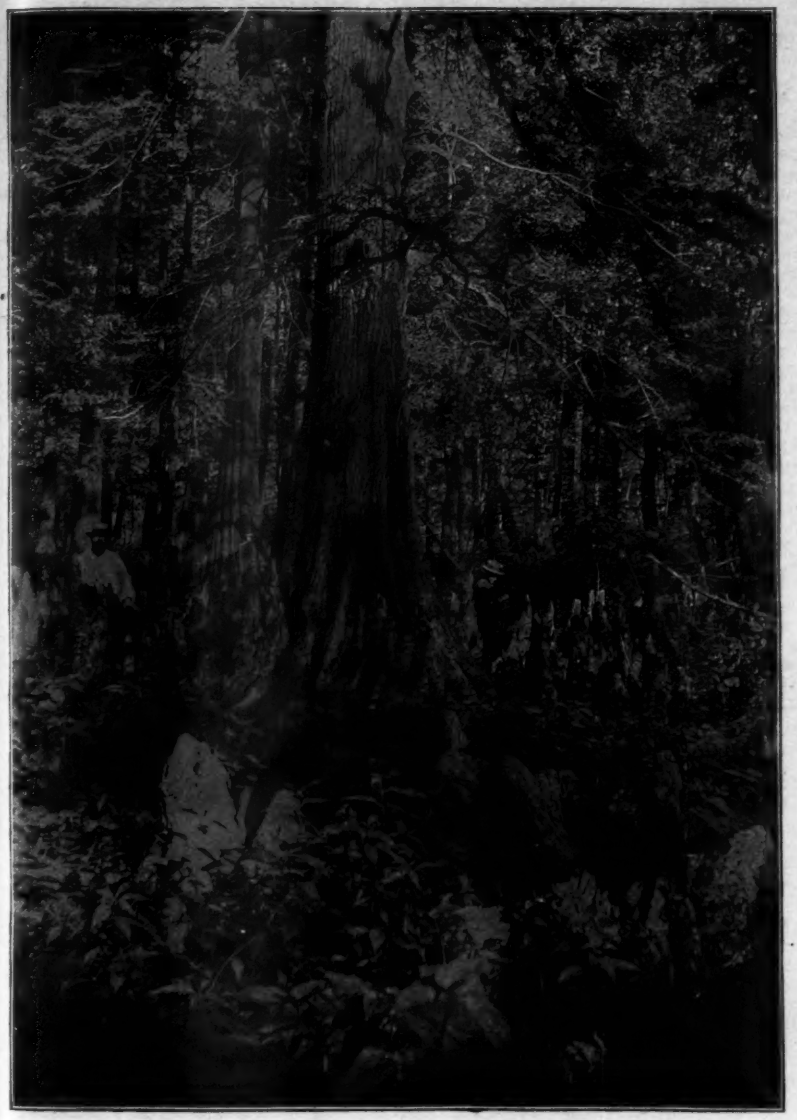

Fig. 2.—A Cypress Swamp in Southern Indiana.—See page 2.

seeds are liberated. It is often impossible to separate the seeds from the fragments of pulp and the particles of sand, nor is it necessary to do so. I sow sand, pulp, seeds and all, in many cases. In the case of rare seeds, however, I manage, by sifting the sand before it is used, to sift out the seeds with tolerable accuracy. In all cases in which the seeds are few and valuable, I should prefer to rub them out rather than to macerate them. There are some seeds which are injured by maceration, unless the operation is expeditious.

All seeds with bony coverings, such as nuts, pits and the like, should be procured as soon after maturity as possible, and put in stratification during the winter. This operation consists in burying seeds in layers of clear sand and exposing them to the weather of winter. A layer of sand an inch or two deep is placed in the bottom of a pot or box, and alternate layers of seeds and sand are added until the pot is full. The pot is now buried a foot or so below the surface in a sandy and well drained soil, or it is placed in a partially protected pit. This prevents the seeds from becoming hard and dry, and the freezing and thawing, with a little variation in moisture, soften or rupture the integuments. It is a popular notion that freezing is necessary to the germination of Peach-pits and similar seeds, but this is an error. Freezing hastens germination by hastening the rupture of integuments, but artificial cracking is as good. It usually happens, however, that buried pits, even though not split by frost, germinate better than those stored in a building and cracked by hand, but this is due to the fact that the buried seeds have not been allowed to become dry and hard. There are certain seeds and fruits which demand particular methods of handling for purposes of convenience. I stratify walnuts and butternuts by heaping them into a pile out-of-doors, mixing in sand and leaves. Acorns are simply kept in boxes of moist leaves. If the seeds are small and few, I place them between layers of thin muslin before stratifying them. They are then easily separated from the sand.

Stratification and sowing may sometimes be combined. If the ground is well drained and well prepared, seeds of Apples, Pears and berries may be sown in the fall, where they are to grow, with good success. I rarely have good success with Apple and similar seeds purchased of seedsmen. The seeds have been so thoroughly dried that they are often past recovery. The best practice in such cases, probably, is to soak the seeds a few days, exposing them to a few sharp frosts. If fruit seeds are to be transported they should be packed in some material which will preserve tolerable uniformity of moisture. Pear-seeds which I have imported from France, packed in powdered charcoal, have germinated speedily.

Many hard seeds do not germinate the first year, even with the best treatment. The seeds of Thorns and other wild fruits belong to this category, and even the seeds of many herbaceous plants behave similarly. Sedges often require two years in which to germinate, and it is unusual for seeds of the wild perennials to germinate until the following spring, even if they are sown as soon as they are ripe. All that can be done with such seeds is to sow them in permanent beds and keep the land clean until the plants appear. I prefer to sow rare seeds in pots. The pots are then plunged in earth in a cold frame, which is placed on the north side of a building or in such a position as to be partially screened from the sun. The frame is then covered with a sash, or, better, with plant-bed cloth. About 100 pots of seeds of Sedges and other wild herbs were sown here last spring, and at the present time less than one-fourth of the kinds have germinated. The pots in which plants have appeared will be plunged in a pit in order that the roots may not freeze dry, and the remainder will remain for a year or two until germination takes place.

MANNER OF SOWING.—Only general hints can be given as to the manner of sowing. Explicit instructions must come with instruction for the cultivation of the particular species. Much has been said concerning the depth of sowing, and rules drawn from the size of the seed have been made; but arbitrary instruction cannot be given. In houses where uniformity of moisture can be maintained, people sow too deep oftener than too shallow. Simply covering the seeds with soil enough to hold moisture is sufficient in most cases, and seeds thus planted are not liable to rot or to be delayed by too much water. The condition of the soil as concerns moisture must always determine the depth of planting in the field also. Plant deep in dry soils and shallow in moist soils. In other words, plant just deep enough to ensure uniformity of moisture.

In fact, the commonest cause of failure in seed-sowing is too much moisture. This is particularly true in the case of old and weak seeds, which are quickly killed by much wetting. Seeds from remote parts of the world, or which, I have reason to suppose, possess low vitality, are never watered directly. They are sown in a pot, and this pot is set inside a larger one, and the intermediate space is filled with sphagnum or packing moss. The water is applied to the moss, and it passes through

the inner pot and into the soil. The seeds of two species of Capsicum, injured by too great heat in drying, failed completely in 1888 when sown in pots and watered in the ordinary manner; but this year seeds from the same saving were sown in the way described, and all, or nearly all, sprouted quickly. Thomas Andrew Knight used to sow rare seeds by simply placing them between dry sods from an old pasture. But any method which ensures uniformity of moisture, and a small amount of it, will give success. Recent tests conducted in our houses show conclusively that seeds usually receive too much water.* There is even danger, as we have sometimes found, of keeping the soil too wet through the use of the sphagnum process outlined above.

So I repeat that the most important point in sowing is the relation of the seed to moisture. I prefer to sow shallow, and then to pack the earth to retain moisture, or if the earth is liable to bake, I cover it lightly with leaves or fine litter, or with boards. Very small seeds I sow upon the surface of well prepared soil, and then sprinkle a very little fine soil over and among them; then I cover with paper, or with a board or something to prevent excessive evaporation. I rarely expose the pots or boxes of such seeds to the light, for the heat of the sunlight accelerates evaporation. It is largely the uniformity in moisture which causes the results of seed tests to read higher than the results of actual sowings in the field. Eight experiments to determine the percentage of variation between tests made in the house and sowings made in the field, with seeds from the same packets, gave the following differences: Pea, 1.1 per cent.; Endive, 17.5; Tomato, 25.5; Celery, 30; Onion, 32; Carrots, 42.5 and 50.5; Turnip, 57.5. These remarkable variations were almost wholly due probably to variations in moisture in the field sowings, and yet the soil in which the sowings were made happened to be unusually and uniformly moist for a light soil.

Cornell University. *L. H. Bailey.*

Stove Plants in Flower.

AMOMUM MAGNIFICUM.—Amomum is a large genus of tropical Gingerworts, and is related to Hedychium, Curcuma, etc. Of the fifty species described, that under notice is by far the handsomest; indeed it is the only one which can be considered of any horticultural merit. Although introduced into England in 1832 by Lord Milton and flowered in his garden at Wentworth, it does not appear to have kept a place among garden plants. The picture in the *Botanical Magazine*, *t.* 3192, gives a good idea of the remarkable character and beauty of this species, and I believe it was on seeing this picture that Sir George Macleay, of Pendell Court, one of our most enthusiastic amateur gardeners, procured plants of it from Mauritius, where it has become naturalized, having been introduced from Madagascar, its home. The plant at Pendell Court has just flowered, and the inflorescence has been forwarded to Kew. In habit and general appearance *A. magnificum* is similar to *Alpinia nutans*, but the stems attain a length of twelve feet, whilst the lanceolate leaves are two feet long, or even more. In Alpinia the flowers are in terminal heads on the leafy stems, but in Amomum they are borne on a separate stem or scape, which is leafless and about four feet high. The flowers are arranged in a dense conical head, which is surrounded by eight or ten large bracts, four inches long by two inches wide, rather fleshy, recurved and colored rich cardinal, the margins being white; in addition to these large bracts, each of the hundred or so flowers is overtopped by a smaller spathulate, curled bract, similar in color to the large ones. The effect of this head is really fine. The plant grows in wet places, that at Pendell Court being in the corner of a tropical tank on a large mound of mud-like soil. It is similarly treated at Kew. For cultivation in large tropical stoves, and especially for aquaria, this plant may be specially recommended. It has been called *Alpinia magnifica* and *Nicolaia imperialis*.

RHIPSALIS HOULLETII.—Several good specimens of this ornamental plant are now flowering freely at Kew. The genus Rhipsalis is scarcely known in gardens, owing to the smallness and lack of ornament in their flowers generally. Botanically, however, it is one of the most interesting of the genera included in *Cactaceæ*, the great variety in the form and habit of the stems of the thirty or so species known being quite exceptional. Some resemble Mistletoe, others Marsh Samphire, others Mesembryanthemum, others Epiphyllum and so on. A collection representative of the most marked species is grown at Kew, and it always attracts attention. The genus is also interesting from the fact of its being the only one among the *Cactaceæ* found wild in Africa, Mauritius, Madagascar and Ceylon, as well as in America. *R. Houlletii* has long, graceful branches, partly round and twig-like, partly flattened, as in Phyllocactus. It branches freely, and when well treated it forms a well furnished, elegant pot-plant. The flowers are borne singly in the numerous notches of the flattened portions of the branches. They are nearly an inch across, not unlike those of a Mamillaria in form, and colored pale creamy yellow, with a crimson eye-like spot in the throat. They are also fragrant. Under cultivation the plants are about three feet high, but in its native haunts it hangs from the trunks of trees to a length of many feet. All the Rhipsalis are epiphytic in a state of nature, but they thrive when cultivated in pots or baskets in a light stove. Flowering in November and December, *R. Houlletii* is worth growing in every collection of stove plants. It is native of Brazil.

Kew. *W.*

* *Bulletin* IX., Cornell Experiment Station.

Orchid Notes.

Dendrobium formosum.—This is without doubt the finest white-flowered Dendrobium yet known, its blooms far surpassing those of its allies, *D. Draconis* (perhaps better known in gardens as *D. eburneum*), *D. infundibulum* and *D. Jamesianum*. It has a wide geographical distribution, being found in north-eastern India, Burmah, extending to Moulmein, and it grows also along the coasts of the Andaman Islands, and is consequently subject to variable climatic conditions. It has been over half a century in cultivation, the first plants of it having been sent to Chatsworth in 1837 by Gibson, who found them on the Khasia Hills. Its first discoverer, however, was Roxburgh, who detected it growing in Sylhet five or six years earlier. The characteristics of *D. formosum* are its stoutish terete stems, which when young are covered with short blackish hairs and furnished with ovate-oblong, deep shining green leaves, four or five inches long, and obliquely emarginate at the apex. The old stems are deeply furrowed, leafless, and often clothed with dull silvery sheaths. From September to Christmas fascicles (or clusters) of from three to five large flowers are produced at the top of the young stems before these latter have finished their growth; but it is not unusual, however, to see the old stems also bearing flowers. The sepals and petals are pure white, the former being oblong-elliptic and keeled behind, the two lower ones connate at the base and produced into a spur. The latter are much broader and obovate, while the white lip, which, when spread out, is rhomboidal retuse, but more or less funnel-shaped in its natural position, has a stain of bright orange-yellow on the disc, the latter being traversed by five slightly raised and asperated keels.

The variety known in gardens as *D. giganteum* is remarkable for the extraordinary size of the flowers, which are half as large again as those of the ordinary type, often measuring from four to five inches across.

Plants of this species may be grown either in pots or baskets, but the latter are preferable, as, when wires are attached, the plants can be hung nearer the glass, and thus obtain a clearer light. Plenty of heat and moisture are essential to them during the season of growth, and they may be freely watered and syringed. The flowers appear on the growing stems, and when they have disappeared it is generally a sign that growth has almost ceased, and the plants should then be placed in a slightly cooler house to rest for two or three months, only receiving water at intervals in order to keep the growths from shriveling. A compost of rough fibrous peat, with a little sphagnum, is very suitable for them.

St. Albans, England. *John Weathers.*

Lælia Crawshayana.—This very rare and interesting Orchid is now in flower with us. It is presumed to be a natural hybrid between *L. anceps* and *L. albida*.

The inflorescence strongly resembles the former, while the vegetative organs are almost identical with those of *L. albida*. It certainly is a great improvement on the latter, while retaining all its pleasing Primrose-like fragrance. As is the case with most hybrid Orchids, this is a robust grower. The clustered bulbs are compressed, pyriform and slightly furrowed, bearing one or two lanceolate acute, leathery, deep green leaves. The scape proceeding from the top of the bulbs is about eighteen inches long, jointed, with sheathing keeled bracts, terminating in a cluster of three to four flowers. These are about three inches across, with narrow sepals and broader petals of dark rose. The narrow three-lobed lip is white, with the side lobes tipped with rose, and the anterior one rosy purple. Lines of yellow run down the middle of the lip, and the throat is streaked with maroon. *L. Crawshayana* was introduced six years ago, and but very few plants are yet in cultivation.

Lælia Gouldiana, like the preceding, is a natural hybrid, having for parents *L. anceps* and *L. autumnalis*, but it does not betray its origin in so marked a degree. Its vegetative organs vary very little from those of *L. autumnalis*, except that the bulbs are more slender and furrowed. The leaves are long and narrow—either one or two on a bulb. The flowers partake of the characters of both parents, but the petals are broader than those of either, more resembling Dawson's variety of *L. anceps*. The lip is shaped like that of *L. anceps*, with the lobes purple-crimson and a bright yellow crest. The sepals and petals are of a very dark rose, intensified at the tips. The scape is about eighteen inches long and bears four to six flowers. It is a very handsome Orchid, but, unfortunately, it has inherited the repugnant odor of *L. autumnalis*. *L. Gouldiana* is an American introduction, having been found among a batch of Mexican Orchids imported by Messrs. Siebrecht & Wadley three years ago. It is now fairly plentiful. Another species of this series has recently flowered in a New York collection, and it is evidently a hybrid between *L. autumnalis* and *L. albida*. I am told the growth is very like the former, but I have only seen one flower, which I thought very pretty, and which seemed intermediate between its supposed parents. This plant is not as yet named.

Miltonia (*Odontoglossum*) *Rœzlii* is nearly always in flower with us, and we find it very useful for cutting, as it lasts quite a long time in water. We always found it difficult to grow so long as we treated it as a cool Orchid. It would gradually dwindle away and be eaten up with thrips, and we seldom saw a flower. We now grow it in the hottest corner of the Phalænopsis house, with the glass extra shaded even in winter. We keep the plants very wet and syringe them two or three times a day. Under this treatment they grow like weeds, making leaves sixteen inches long by one inch broad, and fine, stout bulbs, which improve every year, and produce two or three racemes apiece. Thrips are never seen now. The soil we use consists of equal parts of sandy peat and moss, using small well drained pots. *Miltonia Rœzlii* was discovered in the warmer regions of Columbia in 1873. The bulbs are somewhat compressed, ovate-lanceolate, two or three inches long, surmounted by one or two linear-lanceolate leaves, and from the base of the bulb spring pairs of long leaf-like bracts which enclose the three to four flowered racemes. The whole plant is of a uniform pale green color. The flowers are large, and pure white, excepting a blotch of rich crimson-purple at base of the petals. The lip is large and flat, comprising two-thirds of the flower, pure white, stained with yellow at the base, from which radiate narrow lines of brown. The variety Alba is inferior to the type, from which it differs in having no blotch at the base of the petals. The value of the flowers is enhanced by a very pleasing fragrance. *F. Goldring.*

Kenwood, N. Y.

Christmas Roses.—It is to be hoped that the two interesting articles on Hellebores, in GARDEN AND FOREST of December 18th, will lead to discussion and additional notes from cultivators. The best varieties of Christmas Roses are perhaps the largest and most attractive flowers which bloom at so low a temperature, and they are very desirable in gardens if established in suitable locations. They are Alpine plants, and naturally bloom as soon as melting snow exposes their buds to the sun's influence. Planted on a rockery with a northern exposure no doubt they would follow out their natural course; but we wish them to bloom during the winter with as little protection as possible, for they need protection in an ordinary season in this latitude. Mr. Orpet's record of successful bloom in the open ground probably could not be often repeated; this season having been remarkable for its freedom from binding frosts, by which these plants are promptly made dormant. Hellebores have excited much interest in recent years, and rather divergent cultural directions have been given, as in the notes spoken of one advises light soil, the other retentive. Both recommend shade, while Mr. H. Correven ("Les Plantes des Alpes") says they require a deep, heavy soil and exposure to the sun. As usual, when such varying directions are given, it will be found that plants will grow any way if given a fair chance. Hellebores appear less amenable to good treatment than any plants which have come under my observation, and pursue the cycle of their growth with little deviation, so far as I can see, from any extra care. As to division, my best flowers this season were from plants divided in June. The problem is not so much how to grow them, but how to bloom them as is done in England and Ireland during the winter, so that one can enjoy them. The climate in my locality will not usually admit of their open-air culture after December 1st, and I keep them in a warm cold frame; but my floral enthusiasm does not go so far as to enjoy flowers blooming in a frame. A cold house from which frost is excluded would probably meet their requirements exactly. This year noticing that some bits of Madame Fourcade, which happened to be in the greenhouse, grew away vigorously when heat was started, I have tried the experiment of blooming a few plants there in the coolest part. *H. abchasicus albus* and *H. purpurascens* (which are usually known as Lenten Roses) bloomed very well. *H. Caucasicus* gave me beautiful flowers, while the buds of *H. ruber* and *H. angustifolius* are still unmoved. New leaves are starting, and I am interested in the result of the experiment next season. One authority says I shall lose my plants, another that I shall lose my flowers. As plants growing vigorously do not seem in great danger of death, perhaps the next blooms may appear when due. A number of consignments of Hellebores are received and sold in New York annually. They are usually Lenten Roses, often Dutch Hybrids. The major part probably perish promptly from wet and rot when planted out, victims of the tradition that Hellebores bloom in the snow at Christmas.

Elizabeth, N. J. *J. N. Gerard.*

The Forest.

Forests and Floods.

IN connection with the propositions of the Forestry Congress at Philadelphia and the American Association for the Advancement of Science in Toronto recommending the establishment of a Commission to inquire into the relation of the forest areas on our western mountains to the water supply of those regions, it will be of interest to note two publications just issued from official sources in Europe. The one is the draft of a bill for a new forestry law in Austria, accompanied by a detailed report setting forth the reasons for the provisions of the law; the other is the report of a royal commission of Baden, appointed to investigate the connection of the forest conditions of a section in the Black Forest with the disastrous floods of the Rhine in the winter of 1882.

The first report, from the able pen of the Imperial Privy Councilor and well known meteorologist, Dr. Lorenz von Liburnau, discusses briefly and in general our present knowledge in regard to forest influences on climate and water flow, reaching the conclusion that, while many of the popular ideas on these subjects are derived from imperfect observation and are, therefore, without foundation, or, at least, unproved, nevertheless the evidences from scientific investigation that these influences do exist are sufficient to warrant a conservative forest policy on the part of the government.

The report of the Royal Commission of Baden concerns itself with a special case and is of unusual interest, as it presents for the first time a thorough, though only partial, investigation into the relation of forests and floods. That the verdict in this case is negative does not detract from the value of the report, as showing the method by which this question must be treated; nor does it follow—and the commission takes pains to make this statement—that a generalization or final settlement of the question has been reached by this investigation.

This commission was composed of an officer of the Central Bureau for Meteorology and Hydrography, an officer of the Engineer Department, and an officer of the Forestry Department. The work of this commission was called forth by the disastrous floods of the Rhine and its affluents in 1882–3. These led, also, to the appointment by Prince Bismarck, as Chancellor of the Empire, of a commission for the purpose of studying the Rhine, to determine whether there had been such a deterioration in its water conditions as might justify reforestation and the construction of reservoirs, or the adoption of some other plan than correcting the river-bed in the upper portions of the affluents. The Baden Commission made a very careful survey in that part of the Black Forest which forms the watershed of the Alb River, one of the smaller affluents of the Rhine.

Such a survey comprises not only the geographical, climatic and geognostic conditions of the water-shed, but more specially gives detailed descriptions of the various kinds and uses of the soil, whether under tillage or in pasture, meadow or forest, swamp land or moor land. It explains the systems of water-courses, the utilization of the waters by mills, etc., and the damage done by floods and other unfavorable conditions of waterflow. A few of the data, which together give a comprehensive view of the region, may be of interest for the understanding of the conclusions reached. The watershed discussed comprises 93.5 square miles, the larger part (fifty per cent.) with slopes varying from ten to thirty degrees. The

precipitation at two stations situated at altitudes of 3,310 feet and 1,250 feet had been in an average of fourteen years sixty-five and fifty-eight inches respectively, while during the year 1882 it reached eighty-nine and eighty-one inches, or about thirty-eight per cent. more than usual.

Of the soil, which, for the most part, is derived from granites, gneisses, sandstones and clay-slates, eighty-six per cent. were found impermeable. Forest occupies fifty-one per cent. of the whole area, very unevenly distributed, showing, in the various localities, a range of from twenty-two to ninety-one per cent. Of this, sixty-three per cent. is composed of Spruce, the balance of Beech. The forest, to the amount of sixty-one per cent., was owned by private individuals, in small parcels; and this part was found more or less in poor condition, owing to mismanagement, with openings or thinly stocked places, especially along steep slopes, with poor roads and suffering from destructive pasturage. The forty-nine per cent. of government and communal forest was in good condition.

Some of the conclusions and observations, in which the report abounds, are as follows: First. The observations at the two stations mentioned before "justify the conclusion that the large percentage of forest (fifty-one per cent.) has caused a considerable increase of rainfall." For, while the average amounts of precipitation for Germany at the same, or nearly the same altitudes, are twenty-seven and a half and thirty-eight inches respectively, the values at these stations, as stated above, are thirty-four per cent. and fifty-seven per cent. higher.

Second. The retention and retardation of waters, and especially the slower melting of the snow under the forest cover, is acknowledged. In exceptional cases, however, this influence of the forest, it is stated, may become ineffectual, namely, during an unfavorable sequence of periods of heavy precipitations, as was the case in the catastrophes of 1882.

Third. "Entirely beyond dispute, and, hydrologically, of the greatest importance, is the binding of the soil effected by a forest cover, and, in this respect, the forest of the Alb watershed fulfills its function as a protective cover fully. The satisfactory condition of the water-courses and valley-bottoms and the moderate extent of the damage experienced from the floods in this watershed are due to the small amount of detritus. The soil conditions being extremely favorable to the formation of detritus and rock chutes, their absence can only be due to the forest cover on the declivities." Where such masses of detritus and waste rock and landslide material are found (on about sixty acres) they can be traced to improper deforestation and pasturage.

Fourth. An influence of the forest on the flow of springs could not be stated in the region, although it cannot be generally denied.

Fifth. The employment of flood-reservoirs is discountenanced, as disproportionately expensive.

Sixth. The influence of the Alb forests on the waterflow is stated in summary to the effect that, while the forest could not have prevented such an extreme flood as that of 1882, yet, on the other hand, to the forest is due that the Alb watershed experiences such disasters "only very rarely," and more rarely than adjoining valleys with a smaller proportion of forest area.

This report, treating the question of forests and floods without any preconceived theory to prove, will impress the reader with the fact, which cannot be too strongly insisted upon, that only a careful survey of local conditions can enable us to determine how far in any given case a forest cover acts upon hydrologic conditions.

Not only do rainfall conditions, and the conditions of the forest itself, determine the office of the latter in water distribution, but the geological and physical conditions of the soil and its topography, the conditions and comparative length of the water-courses, are also prominent factors of influence. These are elements which enter into the discussion of the character of the "run-off" only; when the broader question of available water supplies is considered many new elements enter, such as the interception of rainfall by the foliage, the dissipation of water by evaporation, by transpiration, by seepage, and in other ways.

Department of Agriculture, Washington, D. C. *B. E. Fernow.*

Correspondence.

The India Rubber-Tree.

To the Editor of GARDEN AND FOREST:

Sir.—Referring to the article upon the India Rubber-tree published in your issue of November 13th, it is, perhaps, worth while to call attention to the ease with which that beautiful tree can be propagated for cuttings. As is well known, it is only necessary to take a piece of a branch and insert it into moist sand and to protect the cutting with a bell-glass to secure a rooted plant; but it is less well known, perhaps, that the last articulation of the branch is capable of making roots much more quickly and readily than those lower down. Mr. Gamble, inspector of the forests of Madras, in south India, tells me that when they desire, in his district, to make plantations of this valuable tree, workmen always take the end of a branch with a single leaf for the cutting, as experience has shown that this is the way to obtain plants quickly and surely, and I believe that horticulturists would do well to follow this plan always in propagating *Ficus elastica*.

This tree, by the way, does not demand a real tropical climate. On the contrary, it flourishes outside the tropics in regions where snow falls sometimes and which experience several degrees of frost. I have seen in the beautiful garden of Hamah, near Algiers, specimens of *Ficus elastica*, and of its relative, *F. Roxburghii*, as large as our large forest-trees, casting a shade blacker and thicker than I have ever seen before. Generally, the genus Ficus is hardy and easy to acclimatize.

Ficus australis succeeds admirably in Algiers, and *F. Benjamina* is used in the same city as a shade tree in the suburb of Mustapha. There is a large specimen of *Ficus australis*, already old, on the Italian Riviera at Mentone, which, protected on the north by a house, forms a superb mass of dark green foliage; and at Cadiz there is a handsome avenue of large Fig-trees, with small leaves, not far from the Botanic Garden. These are trees two feet or more in diameter of trunk, with thick spreading heads. There are often severe frosts, however, in all these regions.

With regard to the fruit of *Ficus elastica*, I have once seen it on a small plant cultivated in a pot at Bâle, so that it appears that this species bears fruit sometimes in a comparatively young state. *H. Crist.*

Bâle, Switzerland.

Winter Protection of Plants in Germany.

To the Editor of GARDEN AND FOREST:

Sir.—An American is surprised to find so many trees, which are quite tender around Boston, hardy in the latitude of Berlin, although the latter city is so many hundred miles further north. Lawson's Cypress and its varieties, Oriental Arbor Vitæ and the various forms of Retinospora, for example, seem to be in good condition here, without any protection whatever. So also are the fine specimens of Tree-Box, the foliage of which so often suffers in Massachusetts. The varieties of Ivy show also a marked difference in vigor and hardiness, and are much used as an edging of beds and for low hedging. Probably this difference is caused by the steadiness of the cold here. The sun is so low during the winter months that it has little power, even in the clearest of the short days. As an illustration, a sharp hoar frost on the 10th of November was followed by a beautiful clear day, during which the frost remained all day on the northern slopes of the roofs. The moisture of the air is also a noticeable peculiarity. After several days of steady frost, which permitted skating at Berlin and Dresden on the 17th of November, the moisture had so congealed upon the forests that they appeared to have been visited by a considerable fall of snow.

Undoubtedly the evergreen trees of America suffer from exhaustion caused by the cold, dry winds which sweep through them when the sun runs high, in March. But on the other hand there are many kinds of plants which will not endure this prolonged dampness and freezing of the German climate. Special care is taken for the protection of all such plants. In the gardens of the cities and suburbs, and indeed in the grounds of the nurserymen, the principal material for covering is the boughs of the Norway Spruce. This is regarded as much better than leaves, or anything else that is available. It lies so lightly and is so free from dampness, as compared with leaves, that it is much preferred. And it is laid on with so much neatness and taste as to give the beds the appearance of a plot of living green. The sides of houses, where the Bignonia and other vines are trained, are laced up with these boughs so neatly that they seem, at a little distance, covered with Evergreen Ivy.

Our hardy perpetual Roses suffer severely in this climate unless protected, and the boughs prove to be best for this purpose. The bushes are bent and pegged down close to the ground, and are then completely covered with the small branches, usually about two to three feet in length. The systematic trimmings from the forests will, of course, give an unlimited supply of this material, provided the distance of transportation is not too great.

Berlin. *W. C. Strong.*

The Cultivation of Chrysanthemums.

To the Editor of GARDEN AND FOREST:

Sir.—Do the best growers of Chrysanthemums agree as to whether it is better to set out the plants in the spring and pot again in September, or to continue the plants right on through the summer in pots?

Why do Chrysanthemums in my greenhouse have a much lighter shade than the same varieties out-of-doors or in some one else's greenhouse? I notice that the Shakespeare, which has considerable pink in its color out-of-doors, is a pure white in the greenhouse with me.

Plainfield, N. J. *C. D. W.*

[The practice of the best cultivators is not uniform and fine flowers can be had in either way. The essential point is constant care, so that the plants never suffer from too much water, and on the other hand are never allowed to become dry, nor starved, nor to receive a check in any way. During summer growth the plants may require closer attention if they are in pots; but after all the danger of a check from transplanting is more serious, and most amateurs find it almost impossible to have first-rate, solid flowers by planting in the open ground and lifting in the fall. Plants in the open ground should be potted at the end of August, and a week before they are lifted the roots which extend beyond the dimensions of the pot should be cut off.

Inferior or lighter colors in the flowers may come from starvation, from too much heat, from allowing too many flowers to remain on a plant, or more generally from insufficient light. In any greenhouse, flowers of a pink or lilac shade will be lighter than they are in the open air.—ED.]

A Mild December.

To the Editor of GARDEN AND FOREST:

Sir.—Flowers are opening on *Spiræa Thunbergii* and *Erica carnea*, and buds are ready to burst on *Lonicera fragrantissima*, *L. Standishii* and many other shrubs. On Christmas the thermometer stood at sixty-six degrees in the shade, and a few more days of this weather would force most of our early flowering shrubs into bloom. I hardly dare think of the danger which a sudden change to a zero temperature might cause in the case of many plants, and yet just such a change is likely to happen any day.

Arnold Arboretum. *Jackson Dawson.*

To the Editor of GARDEN AND FOREST:

Sir.—Since the 1st of December we have had an unbroken succession of sunny days and frostless nights. The frost in the last days of November nipped the tops of the Scarlet Geraniums, but they have made new shoots several inches long. The Verbenas are still in full beauty; Violets are perfuming the air in all the city yards; Roman Hyacinths have been in bloom outside for over a week; *Lonicera fragrantissima*, which usually blooms on the naked wood in spring, has not yet lost its green summer foliage, but is full of flowers; *Jasminum nudiflorum* is covered with bloom; *Spiræa prunifolia* is in full bloom; *Vinca minor* is coverd with blue flowers, and *Solanum Capsicastrum* carries its load of scarlet fruits with no sign of injury.

Raleigh, N. C., December 25th. *W. F. Massey.*

To the Editor of GARDEN AND FOREST:

Sir.—Yesterday while passing through the fields I noticed the following plants in flower: *Taraxacum Dens-leonis*, *Maruta Cotula*, *Capsella Bursa-pastoris*, *Polygonum aviculare*, var. *erectum*, *Stellaria media*, *Cerastium vulgatum*, *Poa annua*.

Excepting the first, these all grow on low moist ground, and within a few feet of each other. Besides these, I found *Malva Rotundifolia* well budded, and the trailing Arbutus and *Hepatica triloba* with buds almost ready to open.

Youngstown, O., December 19th. *R. H. Ingraham.*

Periodical Literature.

Mr. Edward L. Greene prints in his Pittonia, under date of December 10th, of which advance sheets have reached us, an interesting paper on the North American *Neilliæ*, which he retains in Neillia, published by Don in 1825, discarding the later Physocarpa of Rafinesque, adopted by Maximowicz, the last author to study critically the *Spiræeæ*. Mr. Greene points out that the leaves upon vigorous shoots are rarely found in herbariums, although they often afford valuable characters, being really the normal or typical leaves, while the flowering and fruiting branches usually collected are in reality nothing more than leafy peduncles, on which the leaves are greatly reduced generally in size and often altered in shape, a fact which is equally applicable to the true Spiræas. Mr. Greene increases the number of American species of Neillia from two to four. The Pacific Coast plant, first described by Pursh as *Spiræa capitata*, which has been included by most botanists with the eastern *N. opulifolia*, is now considered a species under the name of *N. capitata*, the shape of the slenderly and obliquely pyriform seed being depended on to distinguish it. It is a widely distributed shrub west of the Sierras and Cascade Mountains, growing sometimes to a height of twenty-five feet, and extremely variable in the character of its pubescence. *Neillia Torreyi* becomes *N. monagyna*, this being the earliest specific name applied by Torrey to the species then thought to belong to Spiræa. The figure (the only one) published in GARDEN AND FOREST, ii., p. 5, is overlooked.

A fourth species, *N. malvacea*, discovered by Mr. Greene on the northern shore of Lake Pend d'Oreille, in northern Idaho, is here first described in a section created to receive it, and characterized by "carpels not inflated, included in the calyx, erect and straight at apex, indehiscent." The leaves are digitately five-veined, and often broadest above the middle. To this species Mr. Greene suggests that many specimens from Nevada, Utah and Montana referred to *N. monagyna* really belong.

Recent Publications.

Aspects of the Earth; A Popular Account of Some Familiar Geological Phenomena. By N. S. Shaler, Professor of Geology in Harvard University. Illustrated. New York: Charles Scribner's Sons. 1889. $4.

A real service has been done the public by the issue in book form of the clear, trustworthy and interesting essays on various groups of terrestrial phenomena which Mr. Shaler first printed in *Scribner's Magazine*. They now form a connected treatise of much greater utility than its title suggests; for not only the present aspect but the past history of the earth is made plain, and from the data thus supplied prophecies are drawn which every man who owns an acre of ground or has a hand in legislation should study as guides for immediate action.

"The Stability of the Earth," "Volcanoes," "Caverns and Cavern Life," "The Instability of the Atmosphere," "The Forests of North America" and "The Origin and Nature of Soils" are successively discussed, man's relation to the world, thus explained, not being for a moment lost to sight. The practical character of the book is, indeed, its most distinctive merit. The chief fact it leaves impressed on the mind is the immeasurable importance of our forests from an economic and sanitary as well as scientific point of view. This could not have been more truthfully or lucidly set forth, nor could there have been a better moment for such an explanation. It ought to prove an efficient antidote to certain mistaken theories with regard to deforestation that have recently been promulgated, as it shows not merely how our water supply, but how our soils, vegetation and atmospheric conditions must be affected by the destruction of our forests. If it wins the popularity that seems in store for it, a great increase of national conscientiousness as regards forest legislation ought to be the result. Many of the points it emphasizes have often been brought forward in these columns; but as marshaled and commented upon by Mr. Shaler they will make a fresh impression even upon the most earnest and loyal of our readers.

Perhaps the most interesting chapter, because the most novel (it is the only one that has not appeared in *Scribner's Magazine*), will be the final one, on "Soils." Even those who know how likely the world is to be deprived within a calculable space of time of its carboniferous and metallic deposits and of its arboreal garment, seldom realize that it is in danger of losing the greater part of that layer of disintegrated rock and decomposed vegetable matter which we call soil. Fancy a world deprived of arable ground and we see a world in which man could not live. The lack of coal and metals he will probably be able to make good in other ways; the lack of forests might be repaired by a very slow process were the soil preserved; but the lack of soil itself could be overcome only by a process as inconceivably long as that which has put the earth in the condition in which we see it now. Yet only one-fifth of the arable lands of the world, as Mr. Shaler computes, are practically safe; four-fifths are in great danger, not only from deforestation, but from the agricultural methods now in use.

So great, indeed, is their danger, that Mr. Shaler considers the soil problem "perhaps the most serious of all the physical difficulties which beset the future of man." What is needed now is forest legislation, accompanied by a wise system of irrigation. What will eventually be needed is legislation to regulate even agricultural processes as simple and apparently innocuous as the annual overturning of the surface of a field by the plow. We must husband our water, we must husband our trees, and we must husband our precious layer of plant-feeding earth if future generations are to be fed at all. The great merit of the present book is that it shows not only the necessity of each of these efforts, but the vital interdependence of each upon the others.

Very charming reading is the passage (beginning on p. 268) where a virgin forest is described, the text being that great Appalachian forest of ours where "are still to be found, perhaps, the finest areas of virgin woods of the deciduous type that remain upon the earth;" where the trees "are of exceeding variety and man has as yet spared them the destruction which he is soon to inflict."

Except for the ill-drawn and ugly figure on the cover, the "Aspects of the Earth" is an excellent piece of book-making, and its illustrations are as illuminative as attractive. Mr. Shaler is too modest when he says that from the point of view of instruction they are the most valuable part of the volume; but they are worthy to accompany his text, and this is high praise. We have felt it a duty as well as a pleasure to call attention to a book which will interest every man who cares to look at the world he lives in, and will wake the conscience of all who feel they owe a duty to posterity.

Notes.

The original appropriation for parks and gardens, in connection with the Paris Exhibition, was 3,082,654 francs, or more than $600,000.

According to the San Francisco *Examiner*, Mr. Adolph Sutro is experimenting with Cinchona-trees on his estate on the neighboring sea-coast. He hopes to acclimatize at least some of the varieties from which quinine is produced; and if so, will doubtless be more than repaid for his enterprise.

We have received the July, August and September numbers of the Journal of the Japanese Horticultural Society. The first contains an excellent colored plate of *Eriobotrya Japonica*, showing a large, distinctly pear-shaped fruit, a form which does not occur on the plants cultivated usually in our southern states.

The prices recently quoted in the newspapers as asked for Christmas-trees in New York refer to the down-town markets, and give no real idea of those paid by purchasers up-town. In the vicinity of Jefferson Market from $2 to $4 were asked for good specimens not more than nine feet tall, and $25 were demanded for the finest and largest trees, which reached thirty-five or forty feet in height.

Mr. Jackson Dawson observes that the fruit of *Berberis Thunbergii* is much relished by quail, although the birds do not eat the entire berry, but pick out the seeds only from their scarlet covering. This suggests the idea that this Barberry would be a good shrub to plant for game covers. The berries remain on the bushes all winter, and they might make excellent food in a season when little else could be found.

A correspondent of the *Journal des Roses* recently recounted an experiment he had made to test the influence of the stock on grafted Roses. Two lots of Roses, one grafted on *Rosa canina* and the other on *R. polyantha*, were forced under glass, both being treated in precisely the same manner. The flowers which stood on *R. polyantha* came into bloom two weeks earlier than the others and yielded twice as many flowers.

M. Von Volxem, the distinguished Belgian dendrologist, referring, in a private note, to our article on *Acanthopanax ricinifolia*, published on page 568 of volume ii., reports that this tree is hardy in Belgium, but grows so slowly that his plants are only a foot high at three years of age, in good soil; another instance to be added to many already known of east Asia deciduous plants growing better in eastern North America than in northern Europe.

A noticeable feature of the Christmas flower trade in Boston was that large, showy flowers were not sought for. Harris' Lilies and Callas found few buyers at any price, while long-stemmed Carnations, particularly flowers of the Grace Wilder, were in great demand. The sales of "Christmas green" were larger than usual, and among the various kinds used there appeared limited quantities of the evergreen *Euonymus Japonicus* in fruit.

A Philadelphia correspondent writes that there is more call for American Beauty Roses than ever before, but even at high prices it is rarely a profitable variety to the grower. The Wootton has not been able to displace it in popular favor; but as the newer Rose is more profitable for growers, even at lower prices, it will force its way in the market. The Duchess of Albany, with its beautiful fresh color, is rapidly gaining favor, and buyers are already inquiring for Madame Hoste. Its delicate yellow shade and perfect shape recommend it to every lover of Roses.

The tops of young southern Pines (*Pinus palustris*), from Georgia or Florida, were conspicuous objects in the shops of New York florists last week. Stems of young, vigorous saplings four or five feet long, with the terminal cluster of leaves, are cut and stuck into flower pots filled with earth. As the leaves remain fresh for a considerable time, the cut stem has every appearance of a living plant. The long, bright green leaves and the white scales of the large terminal bud, which are peculiar to this tree, make the young plants ornamental and attractive objects, well suited for the decoration of churches, for which they are used principally in this city, or other large buildings.

The three Grand Prizes awarded at the Paris Exhibition for information with regard to "Useful and Destructive Insects" fell to Professor C. V. Riley and to the Agricultural Departments of the United States and Japan. Of the seven Grand Prizes awarded in the Section of Agronomy and Agricultural Statistics two fell to the United States Government and the Ministry of Public Works of Mexico. No Grand Prize for wine or viticulture was awarded to an American, but one firm in the United States received this recompense for beer. Eight such prizes were given for machines and processes connected with work in farm and forest (*Materiel et procédés des exploitations rurales et forestières*), and of these, two were gained by Americans—by Walter A. Wood and the McCormicks.

Dr. James C. White, of Harvard University, reports in the Boston *Medical and Surgical Journal* an interesting case of *dermatitis venenata* resulting from the use of the Garden Box. The patient was a young woman suffering from an attack of acute inflammation of the face, which was uniformly and greatly swollen, presenting generally the appearance of Rhus or Ivy poisoning. She had, it appeared, made a decoction of Garden Box and applied it to her scalp for the purpose of preventing her hair from falling out, and the liquid had run down over the face, which she had subsequently washed with the rag used in applying the liquid to the scalp. The inflammation, in spite of local treatment, had not disappeared at the end of six or seven days from the time of the application. Dr. White, who is a distinguished authority on *dermatitis venenata*, remarks that this is the first case of poisoning by Box which has come under his observation, although the poisonous properties of the plant have been suspected for many centuries, as it belongs to a family containing violent and cutaneous irritants, such as croton oil, manchineel stillingia, and the oils of *Jathropha urens* and *Hura crepitans*.

The "flower festivals" of the Japanese are often referred to without clear explanation of their number and character. Five are annually celebrated. At the New Year's Feast, on the first day of the first month, the chief plants used are Bamboos, Firs, *Prunus Mume* and *Adonis Amurensis*. The first two are set by the house-door, and the others are displayed in the living-room. At the second, or "Girls' Festival," which is held on the third day of the third month, *Prunus Persica* is the favorite plant. At the third, or "Boys' Festival," on the fifth day of the fifth month, one sees chiefly the Shobu (*Iris lævigata*); while at the fourth, or "Ladies' Festival," on the seventh day of the seventh month, no flowers are favored, but songs are written on bits of paper fastened to leafy stalks of Bamboo and set on high in the garden. The last feast occurs on the ninth day of the ninth month, and then the Chrysanthemum is honored by old and young alike. These various celebrations have always been held in accordance with the dates of the old national calendar; but now that the Gregorian calendar has been introduced, it is found difficult to procure the proper plants on the proper day. The great imperial feast in honor of the Chrysanthemum has no special time set for it, but is held whenever the flowers in the Emperor's garden are in most perfect condition.